

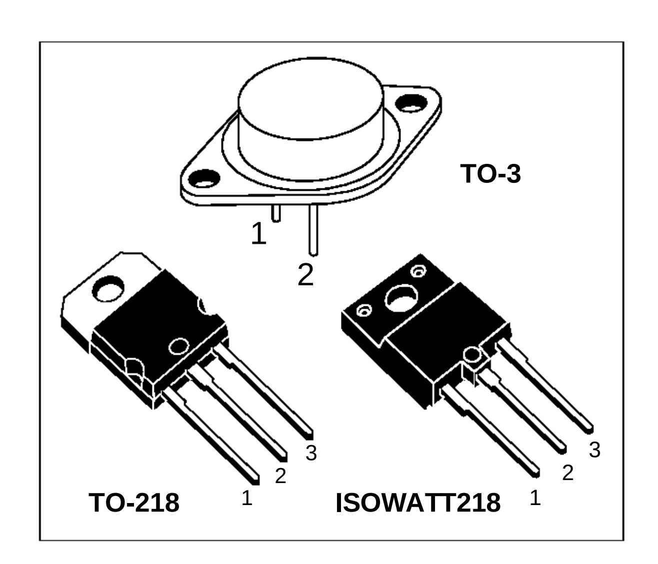

# BU208A/508A/508AFI

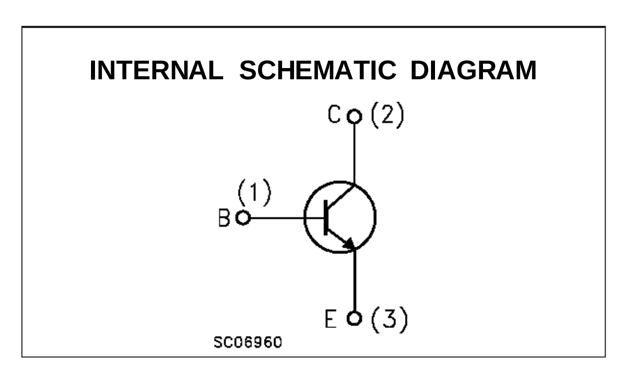
## HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPES
- HIGH VOLTAGE CAPABILITY
- U.L. RECOGNISED ISOWATT218 PACKAGE (U.L. FILE # E81734 (N)
- JEDEC TO-3 METAL CASE.

**APPLICATIONS:**
- HORIZONTAL DEFLECTION FOR COLOUR TV

**DESCRIPTION**
The BU208A, BU508A and BU508AFI are manufactured using Multiepitaxial Mesa technology for cost-effective high performance and uses a Hollow Emitter structure to enhance switching speeds.




**ABSOLUTE MAXIMUM RATINGS**

| Symbol | Parameter | Value | | | Unit |
|---|---|---|---|---|---|
| $V_{CES}$ | Collector-Emitter Voltage ($V_{BE}$ = 0) | 1500 | | | V |
| $V_{CEO}$ | Collector-Emitter Voltage ($I_B$ = 0) | 700 | | | V |
| $V_{EBO}$ | Emitter-Base Voltage ($I_C$ = 0) | 10 | | | V |
| $I_C$ | Collector Current | 8 | | | A |
| $I_{CM}$ | Collector Peak Current ($t_p$ < 5 ms) | 15 | | | A |
| | | TO - 3 | TO - 218 | ISOWATT218 | |
| $P_{tot}$ | Total Dissipation at $T_c$ = 25 $^oC$ | 150 | 125 | 50 | W |
| $T_{stg}$ | Storage Temperature | -65 to 150 | -65 to 150 | -65 to 150 | $^oC$ |
| $T_j$ | Max. Operating Junction Temperature | 150 | 150 | 150 | $^oC$ |

## THERMAL DATA

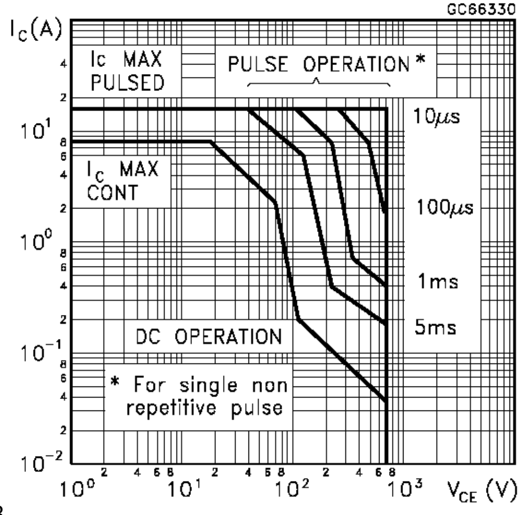
| | | TO-3 | TO-218 | ISOWATT218 | |
|---|---|---|---|---|---|
| $R_{thj\text{-}case}$ | Thermal Resistance Junction-case Max | 1 | 1 | 2.5 | $^oC/W$ |

## ELECTRICAL CHARACTERISTICS ($T_{case}$ = 25 $^oC$ unless otherwise specified)

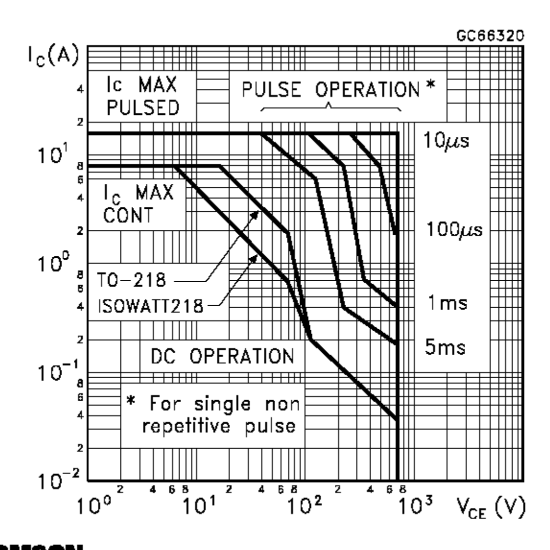
| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{CES}$ | Collector Cut-off Current ($V_{BE}$ = 0) | $V_{CE}$ = 1500 V $T_C$ = 125 $^oC$<br>$V_{CE}$ = 1500 V | | | 1<br>2 | mA<br>mA |
| $I_{EBO}$ | Emitter Cut-off Current ($I_C$ = 0) | $V_{EB}$ = 5 V | | | 100 | μA |
| $V_{CEO(sus)}$ | Collector-Emitter Sustaining Voltage | $I_C$ = 100 mA | 700 | | | V |
| $V_{EBO}$ | Emitter Base Voltage ($I_C$ = 0) | $I_E$ = 10 mA | 10 | | | V |
| $V_{CE(sat)}$* | Collector-Emitter Saturation Voltage | $I_C$ = 4.5 A $I_B$ = 2 A | | | 1 | V |
| $V_{BE(sat)}$* | Base-Emitter Saturation Voltage | $I_C$ = 4.5 A $I_B$ = 2 A | | | 1.3 | V |
| $t_s$<br>$t_f$ | INDUCTIVE LOAD<br>Storage Time<br>Fall Time | $I_C$ = 4.5 A $h_{FE}$ = 2.5 $V_{CC}$ = 140 V<br>$L_C$ = 0.9 mH $L_B$ = 3 μH | | 7<br>0.55 | | μs<br>μs |
| $f_T$ | Transition Frequency | $I_C$ = 0.1 A $V_{CE}$ = 5 V f = 5 MHz | | 7 | | MHz |

* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

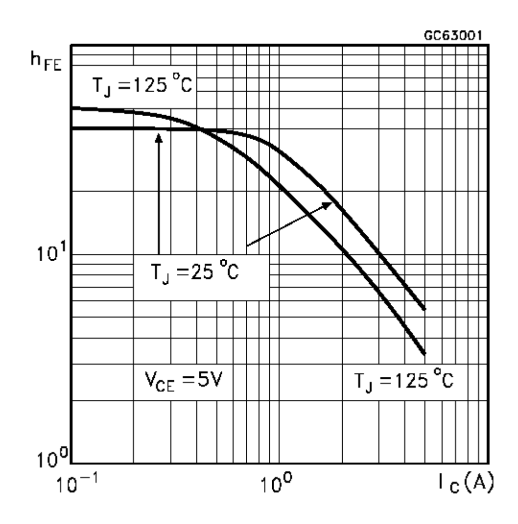
Safe Operating Area (TO-3)



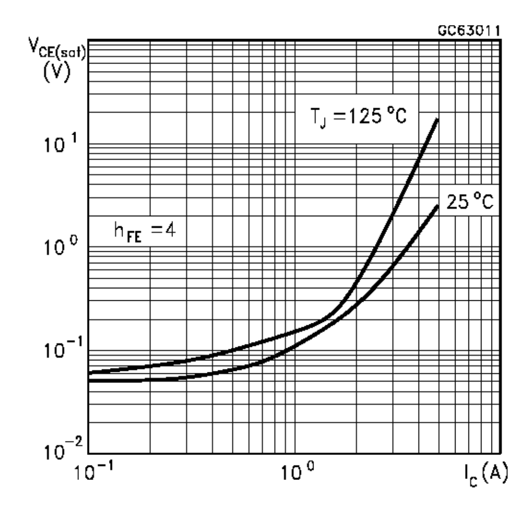

Safe Operating Area (TO-218/ISOWATT218)



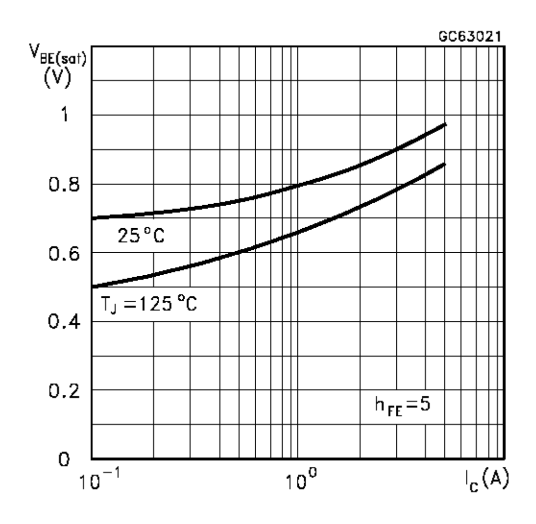
DC Current Gain



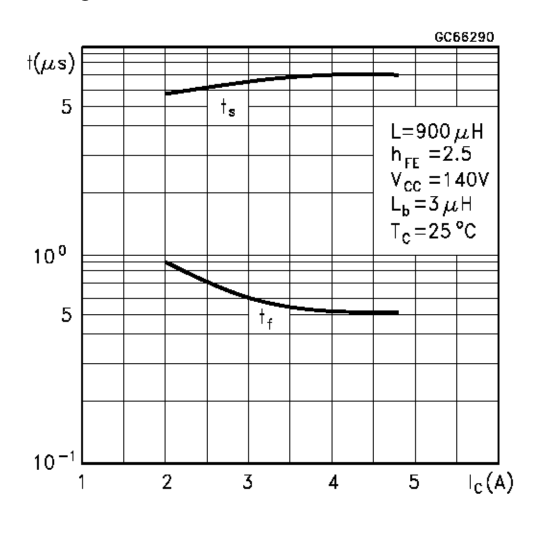

Collector Emitter Saturation Voltage




Base Emitter Saturation Voltage




Switching Time Inductive Load




Switching Time Inductive Load (see figure 1)

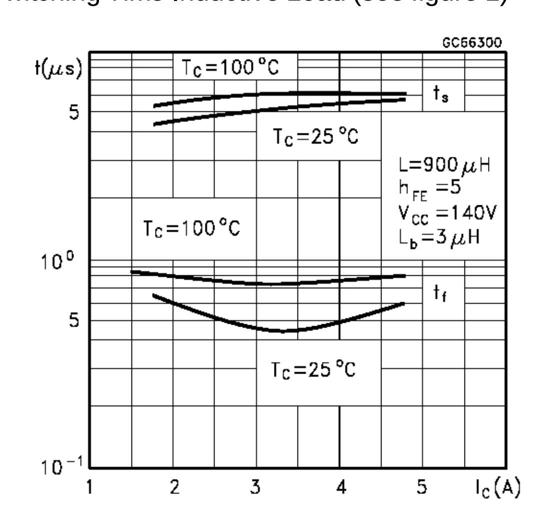
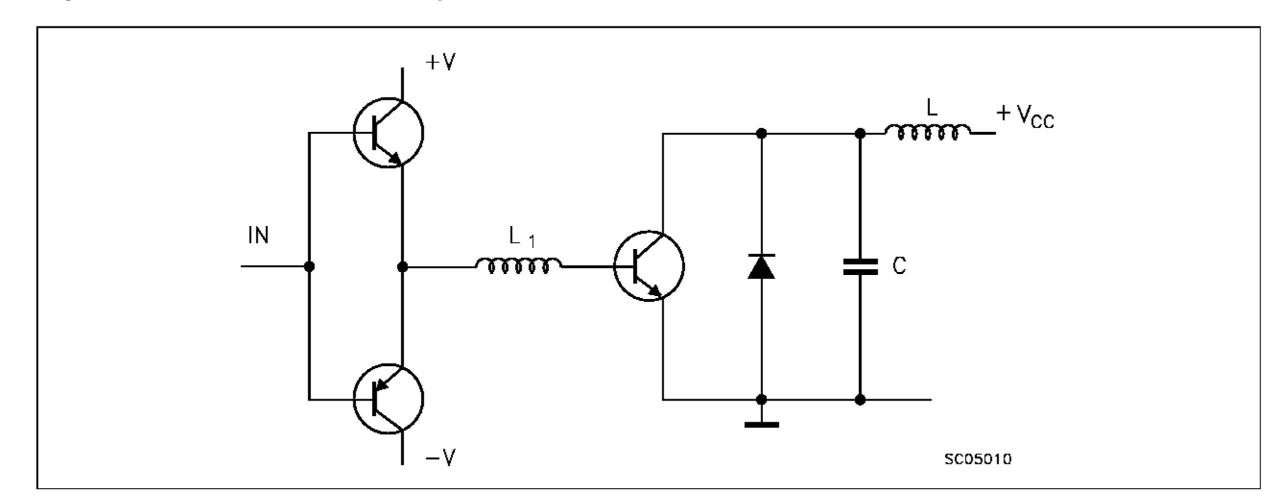
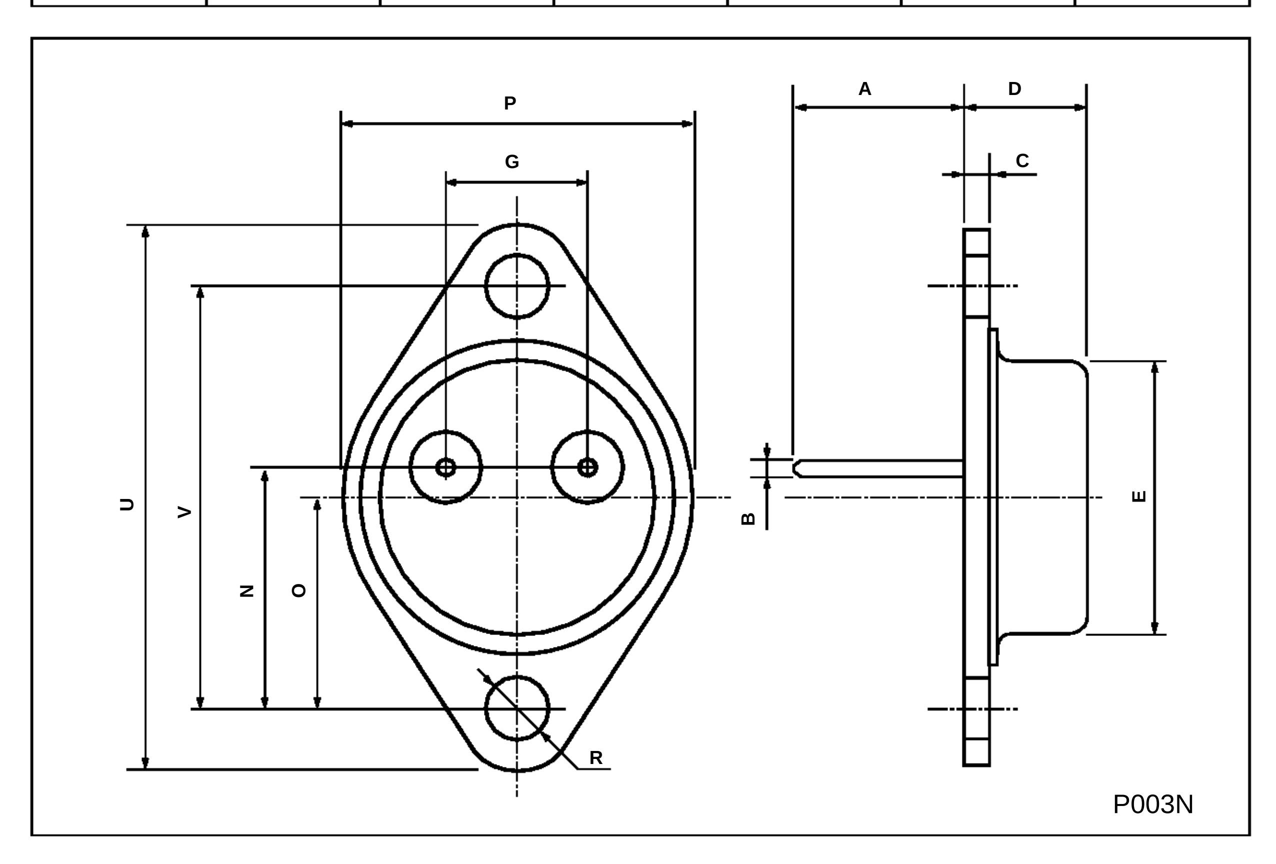


**Figure 1:** Inductive Load Switching Test Circuits



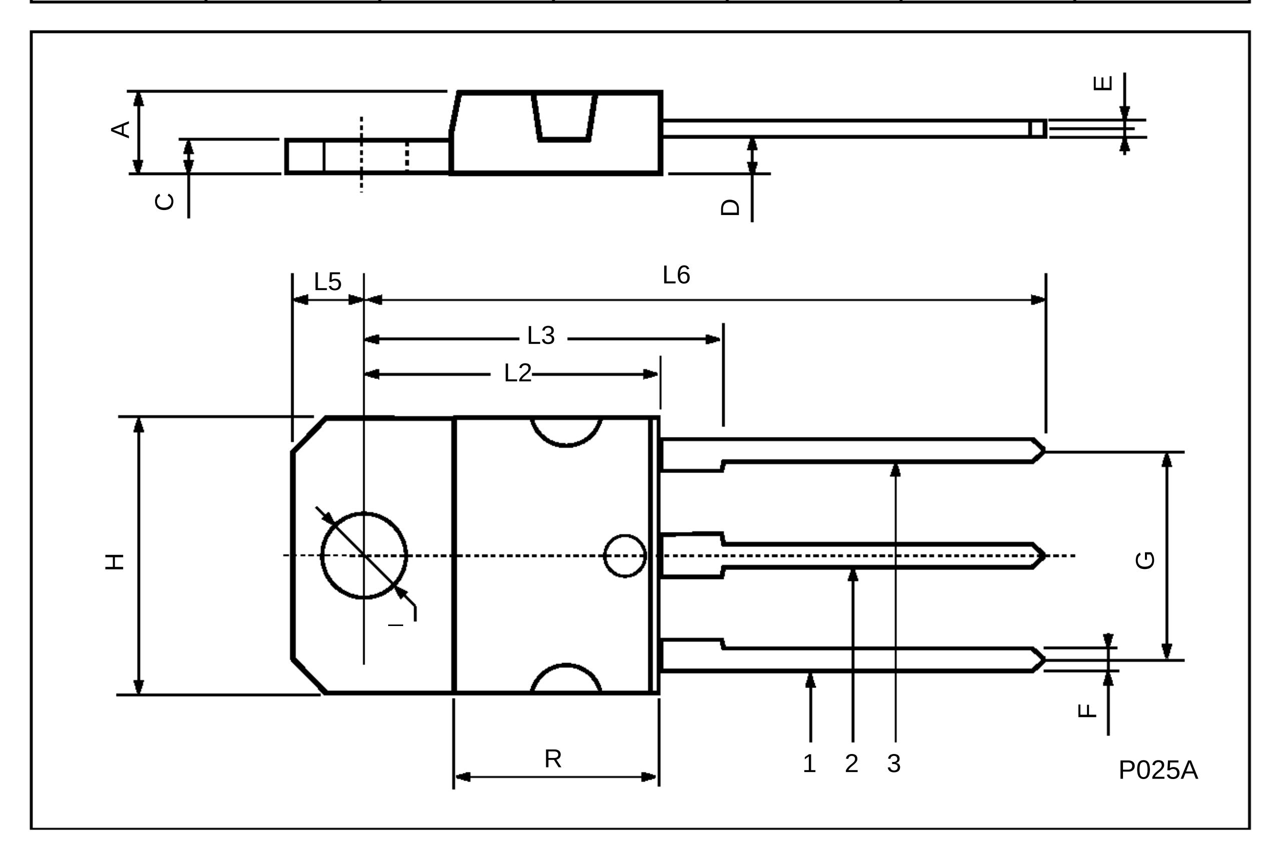
# TO-3 (H) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|---|---|---|---|---|---|---|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | | 11.7 | | | 0.460 | |
| B | 0.96 | | 1.10 | 0.037 | | 0.043 |
| C | | | 1.70 | | | 0.066 |
| D | | | 8.7 | | | 0.342 |
| E | | | 20.0 | | | 0.787 |
| G | | 10.9 | | | 0.429 | |
| N | | 16.9 | | | 0.665 | |
| P | | | 26.2 | | | 1.031 |
| R | 3.88 | | 4.09 | 0.152 | | 0.161 |
| U | | | 39.50 | | | 1.555 |
| V | | 30.10 | | | 1.185 | |



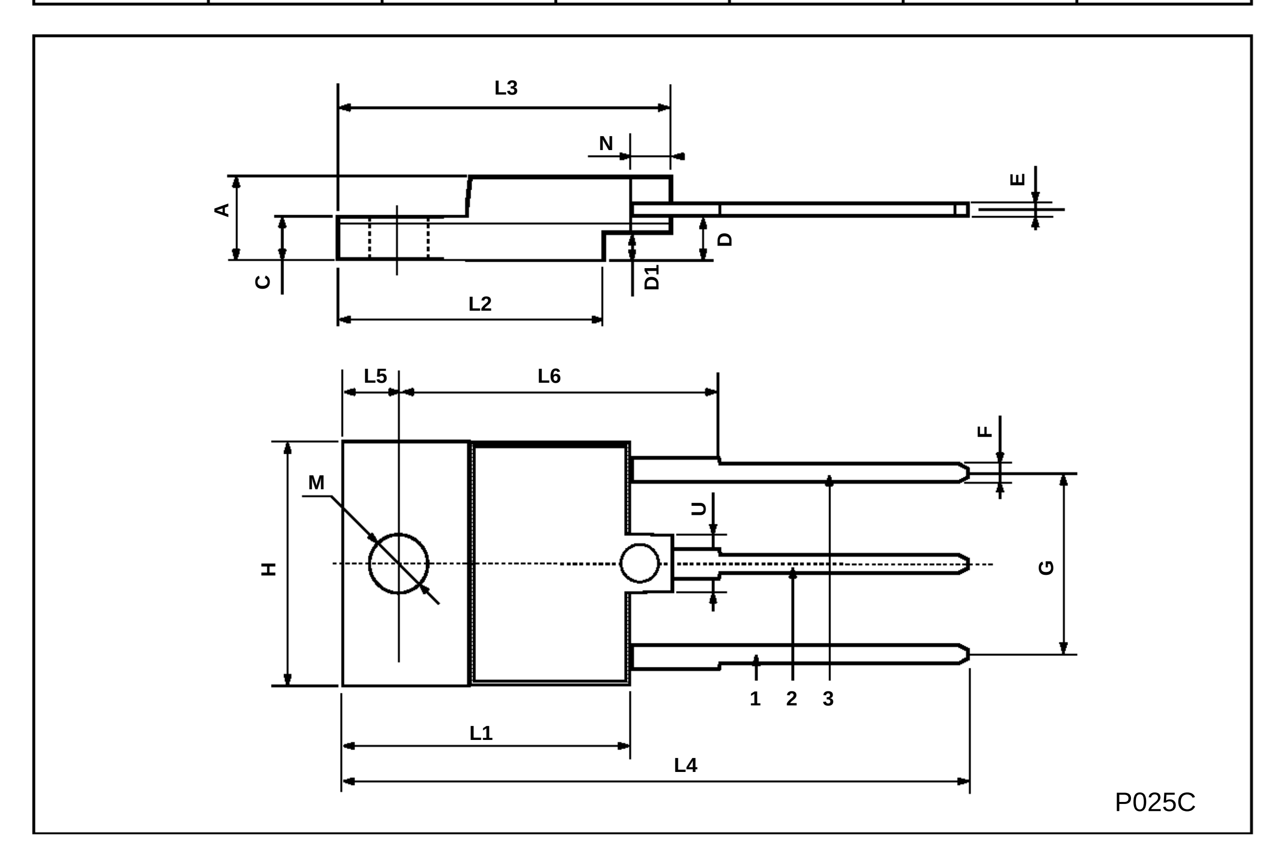
## TO-218 (SOT-93) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|---|---|---|---|---|---|---|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 4.7 | | 4.9 | 0.185 | | 0.193 |
| C | 1.17 | | 1.37 | 0.046 | | 0.054 |
| D | | 2.5 | | | 0.098 | |
| E | 0.5 | | 0.78 | 0.019 | | 0.030 |
| F | 1.1 | | 1.3 | 0.043 | | 0.051 |
| G | 10.8 | | 11.1 | 0.425 | | 0.437 |
| H | 14.7 | | 15.2 | 0.578 | | 0.598 |
| L2 | – | | 16.2 | – | | 0.637 |
| L3 | | 18 | | | 0.708 | |
| L5 | 3.95 | | 4.15 | 0.155 | | 0.163 |
| L6 | | 31 | | | 1.220 | |
| R | – | | 12.2 | – | | 0.480 |
| Ø | 4 | | 4.1 | 0.157 | | 0.161 |



# ISOWATT218 MECHANICAL DATA

| DIM. | mm | | | inch | | |
|---|---|---|---|---|---|---|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 5.35 | | 5.65 | 0.210 | | 0.222 |
| C | 3.3 | | 3.8 | 0.130 | | 0.149 |
| D | 2.9 | | 3.1 | 0.114 | | 0.122 |
| D1 | 1.88 | | 2.08 | 0.074 | | 0.081 |
| E | 0.75 | | 1 | 0.029 | | 0.039 |
| F | 1.05 | | 1.25 | 0.041 | | 0.049 |
| G | 10.8 | | 11.2 | 0.425 | | 0.441 |
| H | 15.8 | | 16.2 | 0.622 | | 0.637 |
| L1 | 20.8 | | 21.2 | 0.818 | | 0.834 |
| L2 | 19.1 | | 19.9 | 0.752 | | 0.783 |
| L3 | 22.8 | | 23.6 | 0.897 | | 0.929 |
| L4 | 40.5 | | 42.5 | 1.594 | | 1.673 |
| L5 | 4.85 | | 5.25 | 0.190 | | 0.206 |
| L6 | 20.25 | | 20.75 | 0.797 | | 0.817 |
| M | 3.5 | | 3.7 | 0.137 | | 0.145 |
| N | 2.1 | | 2.3 | 0.082 | | 0.090 |
| U | | 4.6 | | | 0.181 | |




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